ABSTRACT

1   A signal synthesizer according to the present invention produces a high speed or high

2 frequency carrier waveform without employing an ASIC or FPGA operating at a sampling rate of

3 greater than twice the carrier frequency. The signal synthesizer basically simulates a high speed

4 or high frequency direct digital synthesizer with a plurality of low speed or low frequency direct

5 digital synthesizers. The low speed synthesizers are operated in parallel and each one produces an

6 intermediate carrier waveform with a frequency less than the desired carrier frequency. The

7 intermediate carrier waveforms are subsequently multiplexed together to form a high frequency

8 digital carrier waveform that is subsequently converted to an analog signal with a high-speed

9 digital-to-analog converter. In addition, the signal synthesizer may perform phase, frequency

10 and/or amplitude modulation.